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Educational Research Bulletin

FACTORS TO BE CONSIDERED IN DETERMINING THE HIGH-SCHOOL STUDENT LOAD OF INSTRUCTION

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Ohio State University

The North Central Association of Colleges and Secondary Schools has set up the following standard for student load of instruction: "Units in excess of four should be discouraged except in the case of pupils having more than average ability."

In general, high schools follow the positive part of this advice and allow few pupils to undertake more than four units. Nothing is definitely said in this standard about the amount of work that a dull pupil should carry. We know, however, that there are about as many pupils below average ability as there are above it. If four is the proper load for the average and more than four for those above the average, it stands to reason that the dull pupils' load should be less than four units.

Book[1] made a study of 5,748 Indiana high-school students and on the basis of intelligence ratings, found that 22 percent were ranked as superior or very superior, 52 percent as average, and 26 percent as inferior or very inferior. At the same time he found that 90 percent of the graduates finished high school in four years, the regular time. Less than seven percent graduated in less, and approximately three percent in more, than four years. From this study it is evident that the bright pupils are not selected for acceleration. It is quite probable that many able students in high schools are not working up to their best standard and that slow pupils are forced to carry approximately the work of the average group.

The idea of allowing bright pupils to carry more than four units is a good one in theory but does not seem to exist in practice. Common sense tells us that many slow pupils should carry less than four units but this is seldom done.

The difficulty in following out the recommendation of the North Central Association is twofold, for the term "more than average ability" is vague and does not cover the entire ground. Ability is a general term and is dependent upon intelligence, past success in school, health, study habits, and other factors. Moreover, a student may have the ability but not the inclination. He may see more value in athletics, in general social development, or in earning money than he does in obtaining high grades or even in passing all of his courses.

It is impossible to do justice to students if a general rule is applied. Each case should be treated separately, just as each patient is diagnosed by the physician. The doctor does not ask if the patient is in average health or better than the average, but he wants to know the condition of his patient's pulse, heart, lungs, and stomach.

Let us suppose we are to determine how many units of work a high-school pupil should carry. Our problem is not

(1) Book, W. F. *The Intelligence of High-School Seniors*. New York, Macmillan Company, 1922. pp. 43-92.

as simple as merely knowing whether he is above average ability. To determine the load he can carry without injury to his health and mental habits, we must consider the various facts that will condition his success. These factors I shall try to explain in the light of experimentation and from the common-sense point of view. Before discussing them, however, certain other factors should at least be mentioned in passing—reading ability, school attendance, nationality, and retardation or over-ageness.

Intelligence.—Intelligence is a factor in all school work and a certain degree of it is necessary for satisfactory work in high school. Proctor's[1] study shows that fifteen to thirty percent of high-school pupils are incapable of succeeding in the conventional high-school subjects. We should know who these pupils are so that adjustments in courses can be made. A light instruction load might enable many of them to graduate in five years without acquiring the habit of constant failure. Book[2] also found that "there is a positive correlation between intelligence scores and success in school, indicating that general intelligence or ability to learn is an essential factor in determining school success."

The modern tendency to give intelligence tests to high-school pupils, placing them in sections according to their ability, and maintaining different standards of work for each group, makes the application of a unit-system difficult. The question arises, shall the same amount of credit be given to the pupils who do a minimum amount of work as to those who carry the maximum load in a given course? Likewise, the dull pupil who is fortunate enough to be classified in a slow-moving group with a minimum amount of content to learn, is much more likely to pass than a similar pupil in an unclassified group where the difficulty of the course is based upon the achievement of average or bright pupils.

Another disturbing factor in administering formal units is the policy of credit for quality. In recent years, this question has caused considerable agitation. There are good arguments in favor of it and many institutions now give A students more actual hours of credit on the completion of the course than to students obtaining grades of B, C, and D. A complication arises here from the fact that different standards of achievement are allowed. The unit has lost its actual significance.

Previous school record.—In judging the ability of high-school pupils, the previous school record has doubtless been used more than anything else. This, however, is not the best criterion for determining a student's load. The student may have been working far below his capacity, and because of this is not allowed or required to do more. On the other hand, he may have been working beyond his normal capacity by excessive application. An added load may become the proverbial straw which breaks the camel's back and results in failure and discouragement. Many pupils undoubtedly will obtain more benefit from extra-curricular activities than from regular classroom work added to the average load.

Health.—The adolescent student may have intelligence and other necessary factors for successful school work, but he may suffer physically if a heavy load is imposed upon him. A lighter schedule than the average is often justifiable in the case of a bright pupil who is nervous or in bad health. In one of the succeeding years a student can easily make up the number of units necessary to graduate within the four-year period, if his physical condition improves. In this connection, it might be well to point out that the four-year period for high-school study is entirely arbitrary. It should not be an excessive honor to graduate

(1) Proctor, W. M. *Psychological Tests and Guidance of High-School Pupils.* Bloomington, Illinois, Public School Publishing Company, 1921. pp. 10–22. (Journal of Educational Research Monographs, No. 1)

(2) Book, W. F. *op. cit.*, p. 109.

in less than four years, nor an utter disgrace to graduate in four and a half or five years.

Effort.—Some students with good ability are just naturally lazy and will not put forth sufficient effort to do good work. On the other hand, there are some dull students who work so hard on their lessons that their standing is above average. Koch gives an illustration of this first type.

> Student B.—This lad, according to his I. Q. of 136, is brilliant, standing at the head of his class in mentality, but he loafs. Being the son of a professional man, he has had superior social advantages and is popular in his set. His instructors are inclined to feel that his popularity is a kind of *sine qua non* with him. Every school man knows the type. Work fails to interest him seriously, and as a result he has lost caste with his instructors. He managed to escape the deficiency report, however, passing his subjects by a narrow margin.[1]

As an illustration of the other type, the author has in mind a high-school girl who was considered a superior pupil by the majority of her teachers. This girl turned in excellent notebooks, fulfilled all formal requirements such as written papers and showed great interest in the work. Upon the application of several intelligence tests, it was found that the girl was somewhat below average. Furthermore, it was found that her parents were very ambitious for her and helped her with her lessons and saw that she spent a large amount of her time in home study.

Home conditions.—Home conditions play a large part in the school success of some students. Disagreements and quarrels on the part of parents, divorces, and the death of one or more of the parents often affect the pupil's work to a large degree. Fortunately these factors do not operate in the case of many students. Some other home conditions which function in determining success will be discussed under the topic *Study habits.*

Outside employment.—High-school students frequently spend one or more hours a day on duties other than those pertaining to school. Many girls have housework to do and have little time to spend on home study. In some cases, the boys partially support the family and still more often earn money for personal expenses. A certain amount of such work is doubtless good for the average boy or girl, but it is an exceptional one who can work three or more hours a day and maintain a full schedule.

Study habits.—Many students do not know how to study and they waste a large amount of the time devoted to it. The following letter from a university professor illustrates the point:

> I have been investigating the cause of failures in many classes. To a very large degree it is because the students have no conception of how to study. Graduating from high school has meant a minimum amount of work for them. Suddenly they are put upon their own and asked to study for themselves. It is impossible and they fail. Many of them are perfectly good youngsters and are earnest. They are failing through no lack of their own but the high school is to blame.

Of course, the high-school teacher can place the blame on the elementary teacher and the elementary teacher on the kindergarten. Nevertheless, this is a problem and several studies have been made to determine some of the factors which influence it. Bowden[2] through replies received from high-school pupils found that less than fifty percent had private places to study. About seventy-five percent carried four courses and twenty-five percent five courses. Less than forty percent claimed to spend as much as two hours a day outside of school. Approximately seventy-five percent attended movies at least once a week and less than fifty percent were at home as many as five nights a week. King[3] found that from five to eight hours of home study a week were most com-

(1) Koch, H. C. "The Transmutation of Mental and Educational Scores on the Kental Principle in a General Educational Survey," *Educational Research Bulletin*, 1:187-93, November 22, 1922.

(2) Bowden, A. O. "Investigation of Some of the Causes of Elimination from the High Schools of South Dakota," *School and Society*, 6:447-50, October 13, 1912.

(3) King, Irvin. *The High-School Age*. Indianapolis, Indiana, Bobbs-Merrill Company, 1914. pp. 171-72.

monly reported by Iowa high-school students.

In a similar study Heck[1] showed that boys reported on the average approximately one hour and fifty minutes a day for study and the girls two hours and thirty minutes. If these reports are trustworthy, some students are spending considerably more than two hours a day on preparation while others spend much less. Not only the amount of time spent on study at home, but also the physical conditions under which the study takes place, and the ability of the student to apply himself to his task are all important.

Extra-curricular activities.—In preparation for the complex life which a student must enter upon graduation, there is often a question as to which is the most important phase of the high school, the regular school work or the extra-curricular activities. When a business man inquires concerning the fitness of a graduate to fill an important position, he more frequently asks how he gets along with his fellow students and whether he is a natural leader, than how many of his grades are A's, B's, or C's. Extra-curricular activities may take up considerable of the pupil's time. The time necessary for such activities should be considered when the pupil's schedule is being made. This is particularly true in the case of dull pupils. An interesting article written by Breeze[2] indicates that the superior group has the highest percent of participation in extra activities. It is possible that these students could carry, in addition to their extra activities, an added unit to their present schedule.

In this connection we should discuss the topic of the pupil who has been accelerated through the elementary grades and reaches high school at a much earlier age than the average. Should he carry an excessively large load even though he can carry it successfully, or should he spend more time in high school and participate in general school activities? In other words, are we apt to force some students through at too rapid a rate and make them misfits in life? Alltucker[3] reports that accelerated pupils are not misfits in the senior high school. Swanson found that participation in extra-curricular activities does not materially affect scholarship in the

TABLE I. AVERAGE DAILY AMOUNT OF TIME IN MINUTES SPENT ON DIFFERENT SUBJECTS IN HIGH SCHOOLS

Subject	Time	Subject	Time
Latin IV	64.7	American History	46.5
Latin III	59.9	Spanish I	46.4
Stenography	56.1	English XI	46.1
Latin II	56.0	Modern History	45.6
Latin I	51.9	Commercial Arithmetic	45.1
French III	51.1	Ancient History	43.3
Spanish II	49.9	English IX	42.6
French IV	48.6	English X	42.6
French II	47.7	Science, Chemistry, Physics	42.2
French I	47.1	Civics	40.0
Algebra	46.5	Home Economics	33.2
Geometry	46.5		

(1) Heck, W. H. "A Study of Home Study," *School Review*, 23:577-600, November, 1915.

(2) Breeze, Retha E. "Extra-Curricular Activities and Classroom Achievements," *Peabody Journal of Education*, 1:344-46, May, 1924.

(3) Alltucker, Margaret M. "Is the Pedagogically Accelerated Student a Misfit in the Senior High School?" *School Review*, 32:193-202, March, 1924.

case of students of somewhat more than average intelligence. If pupils of more than average ability can do extra work and still maintain a good level of school work, the question again arises as to whether the added unit should be required of them or whether they should participate in other activities. It is quite possible also that credit should be given for extra-curricular activities since students, parents, and employers often consider extra-curricular activities of as much or of more value to the pupil than the regular course. Kansas City, Missouri, according to Swanson's[1] article, gives credit for such work.

It will be noted from this table that languages required the largest amount of time and that such subjects as home economics, civics, and sciences required the least. Uhl also arranges the different subjects in order of difficulty, from the very difficult to the very easy. These are shown in Table II[4].

He says concerning these data that "A wide variation in time expenditures exists within each department and between different departments. Variations in time expenditures between schools of different sizes are negligible. Actual differences are, however, considerable."

Obrien[5] and Dynes[6] report the difficulty of subjects as determined by the percent of pupils failing in them. Obrien gives the order of these subjects from the most difficult to the easiest as follows: algebra, Latin, geometry, English, history, physics, manual training, botany, bookkeeping, chemistry, sewing, and drawing. According to Dynes' study, the most difficult subjects were Latin, geometry, English, history, and physics, and the easiest subjects were drawing, sewing, chemistry, bookkeeping, botany, and manual training. In the case of pupils who graduate from high school, Obrien shows that most failures

TABLE II. RELATIVE DIFFICULTY OF CERTAIN HIGH-SCHOOL SUBJECTS AS DETERMINED BY THEIR INDEX NUMBERS

Very Difficult	Difficult	Moderately Difficult	Moderately Easy	Very Easy
Spanish II	American History	Modern History	General History	Civics
French III	Bookkeeping	English History	Ancient History	General Science
French IV	Commercial Arithmetic	Physics	Medieval History	Biology
Latin I	French II	Plane Geometry	English IX	Home Economics
Latin II	English XI	Algebra	English X	
Latin III	English XII	French I	Spanish I	
Latin IV	Advanced Algebra		Solid Geometry	
Stenography			Manual Training	

Difficulty of subjects.—Before deciding how many units a pupil of a given ability can carry, we must know something definite about the difficulty of the subjects themselves. We have at least two ways of indicating the difficulty of high-school subjects. Studies have been made showing the time pupils spend upon preparation of different subjects and the percent of failures in them. In a study of 85,000 cases, Uhl[2] found a wide variation in different amounts of time used by pupils on different subjects. Table I[3] gives the average number of minutes spent per day on different high-school subjects.

(1) Swanson, A. M. "The Effect on High-School Scholarship of Pupil Participation in Extra-Curricular Activities," *School Review*, 32:613-26, October, 1924.

(2) Uhl, Willis L. "The Time Element in High Schools," *School Review*, 32:103-21, February, 1924.

(3) Uhl, Willis L. *op. cit.*, Table I. p. 108.

(4) Uhl, Willis L. *op. cit.*, Table VI. p. 113.

(5) Obrien, F. P. *The High-School Failures*. New York, Teachers College, Columbia University, 1919. p. 23. (Teachers College, Columbia University, Contributions to Education, No. 102)

(6) Dynes, J. J. "Relation of Retardation to Elimination of Students from the High School," *School Review*, 22:396-406, June, 1914.

occurred in mathematics and the least in Spanish and Greek. The other subjects given in order from those causing the largest number of failures to those causing relatively few, are Latin, English, science, history, German, French, and business subjects. Here we have further evidence that as far as risk in failure on different subjects is concerned, and the amount of time consumed, prescribed units are not equal in value. It would be entirely possible for a student to carry five subjects with an equal or a less amount of work than he could four.

Grade in school.—With the increasing attention placed upon electives in American high schools, it is becoming more and more possible for Juniors and Seniors to take subjects with Freshmen and Sophomores. Judd[1] says "The mixture of students of different degrees of maturity operates to break down the unity of the course. The teachers hardly feel justified in applying the same measuring rod to the Freshmen and Seniors in the class, with the result that the range of work expected differs greatly in different individuals."

(*Continued on page 278*)

SOME ECONOMIES WHICH HAVE BEEN EFFECTED IN ADMINISTRATION OF HOME ECONOMICS IN PUBLIC SCHOOLS OF OHIO

ALICE M. DONNELLY
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The following investigation into economies practiced by home-economics classes in the Ohio public schools was inspired by an article on "School Economies" in the *Educational Research Bulletin* for February 18, 1925. The article emphasized the need for economy in the management of every department and asked for information about economies that have been effected by those responsible for the administration of public schools.

Data for this investigation were obtained from supervisors of home economics in various cities, counties, and exempted villages of Ohio. The twenty-five names of the supervisors were taken from cards compiled last year and now on file in the offices of the Bureau of Educational Research. The list, however, is not complete. Teachers new in the work last year have been omitted because their cards were inaccessible. It is also possible that some teachers who have charge of administrative work in this field did not mention the fact in their records.

A personal letter was sent to each of the twenty-five supervisors, stating the purpose of the investigation and requesting information about specific economies practiced in the administration of their departments. Ten replies were received, the basis of the following list. These letters have been supplemented by inquiry put to friends of the writer. Leading questions were asked—a sort of pumping process—to get as much information as possible. This list of economies is, then, the result of both personal interviews and letters, and it is offered as a preliminary statement only.

The numeral appearing at the right indicates the number of times the item was mentioned in the replies.

1. School carpenter makes equipment.....4
2. Manual-training classes make repairs, furniture, equipment.....11
3. Superintendent of buildings makes equipment, repairs.....2
4. Girls refinish dining-room furniture for use in meal serving.....1
5. Course of study includes lessons in sciences of laundry, dietetics, health, home making, child care, and home nursing; reducing purchase of materials..1

(1) Judd, Charles H. "Formalism in Defining High-School Units," *School Review*, 22:649-65, December, 1914.

6. Menu cards, cookbook printed by the school press....2
7. Supplies bought in wholesale quantities...3
8. Food prepared in classes sold to pupils, teachers, lunchroom....8
9. Pupils bring food materials from home and return finished product to the home..2
10. Banquets served by classes to make money for the purchase of equipment....1
11. Food sales for the purchase of equipment..1
12. Aprons and layettes made and sold....1
13. Pupils furnish own materials for work in clothing classes....2
14. Lunchroom supervisor to oversee the buying and management of all school lunch rooms in the city....1
15. Agricultural classes raising vegetables for canning....1
16. Food lessons so planned that seasonal buying is considered....1
17. Sewing machine bobbins, millinery supplies, bought at wholesale, sold to pupils at slight increase....2
18. Adjustable stoves permit double use of equipment....1
19. Spread equipment for five laboratories so as to equip a sixth one....1
20. Moving old equipment to a new building..1
21. Supervisor checks books and bills for supplies monthly....1
22. A yearly inventory of all supplies and equipment....1
23. Competitive bids for supplies....1
24. Definite per-pupil cost set for the purpose of encouraging economy in buying....1
25. Eliminate instruction in early grades....1

The letters brought out some interesting facts, particularly as to furniture made by boys in manual-training classes. According to Miss Gittens of Columbus, magazine racks, fitting stands for sewing rooms, a gate-leg table, coat rack, breakfast table and chairs were made. Screens were also made for one laboratory at a "saving of more than half." Miss Stiffey, also of Columbus, says that cafeteria counters, boxes for silverware, book racks, and tray rails were put up by the boys. She quotes a definite figure of $300.00 which was saved by having the manual-training pupils put up shelving in the storeroom of the cafeteria at the new North High School here. Miss Lockwood, of Lorain, reports that the boys made rods for individual desks. Bulletin boards, lockers, tables, and cupboards made by these classes are reported by Miss Patterson, in charge of teacher improvement of Smith-Hughes teachers in the state.

These reports seem to indicate that the manual-training departments are a real boon to the economical administration of home economics. Probably the next most prolific source of help is the school carpenter, or sometimes the janitor. The replies showed that he, or they, also make tables, cupboards, and lockers at a great saving to the departments.

AN INVESTIGATION OF THE MECHANICAL HABITS IN READING OF GOOD AND POOR READERS

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Many of the papers written on the general subject of the difference between good and poor readers seem to imply that these differences are often due to variations in intelligence—in short, that intelligence is the one main factor in the situation. Other investigations have sought to emphasize other factors but have not been able to get wholly away from fundamental differences between the good and the poor reader in the matter of intelligence. In this paper the writers have sought to eliminate this one factor by selecting pupils so that they were paired in general ability as reflected in tests of intelligence and to investigate what further differences might be found between the good and poor readers selected.

In February, 1925, a survey was made of First Avenue School in Columbus,

Ohio.[1] From the results of this survey ten cases were selected for intensive study. These ten children were paired by their scores on the intelligence test used, but members of each pair varied markedly in their scores in reading. The intelligence score for each pair was the same, or practically the same, but the reading scores showed one member a good reader and one member a poor reader. The question then arose, "With the intelligence factor controlled, what differences are there between the members of each pair?"

For this preliminary study a small number of children was selected, and only the mechanical side of reading was investigated. Further studies will be made with more children and with an attempt to get at comprehension as well as mechanical habits. For the actual testing, the reading paragraphs of the Third-Grade Attainment Scale, devised by one of the authors, were given. This scale consists of tests in reading, arithmetic, and spelling, but just the reading passages were used. These consist of seven short paragraphs, each followed by four questions which have objective answers. Each paragraph was used for the investigation of a single "habit" in reading. The arrangement was as follows:

Paragraph 1. Number of fixations per line
Paragraph 2. Number of regressive movements
Paragraph 3. Amount of lip-movement and vocalization
Paragraph 4. Speed of silent reading
Paragraph 5. Accuracy of eye-placement at the beginning of the line
Paragraph 6. Speed of oral reading
Paragraph 7. Knowledge of vocabulary

The number of eye-fixations was found by the rough test of watching the pupil's eyes in a mirror so arranged as to permit the observer to record the number of shifts. The experimenter tried out this method on various friends until she was able to count the fixations with great accuracy. The number of regressive movements was determined in similar fashion. The amount of vocalization was simply estimated. The speed with which the child read paragraph 4 and paragraph 6 was of course, contrasted, to determine the extent to which vocalization had been suppressed; the pupil was timed with a stop watch. The accuracy of jumping to the beginning of a line was found by using the mirror and watching for the long jump back to the left. In the last passage several words were chosen—all the important words in the paragraph—and the child was given each word and asked its meaning; he had first read the paragraph. The children answered the questions at the end of each paragraph simply to show the examiner that the selection had been accorded a reasonable degree of comprehension.

It is realized that the methods employed were rough, but it was felt that the first investigation of this sort need not employ refinements of method until the experimenters were surer of just what might be obtained in such a problem.

The amount of lip-movement and vocalization was estimated on a scale of 5. That is, a score of 5 meant no observable movement or vocalization; 4 meant only occasional movement; 3 meant overt lip-movement but no sound; 2, overt movement and audible pronunciation of hard words; 1, audible pronunciation of every word.

The main results, summarized in Table I, show that the good reader is distinctly superior to the poor reader of the same degree of ability. On the average, the good readers fixate about half as many times per line, they have about a fourth as many regressive movements, they hit the beginning of the line accurately nearly twice as often, they show less lip-movement and vocalization, they read faster silently and

(1) The writers are indebted to Miss Clara Wing, principal of the school, for her help and cooperation in this study.

orally, they save nearly half of the time by silent reading, showing a suppression of vocalization, and they know more words in a given passage.

In spite of the small number of cases it is felt that some conclusions may be drawn from the above experiment.

1. It seems fairly evident that reading consists to a considerable extent of the formation and integration of certain mechanical habits. At least, those who possess these habits in the greatest development make good scores in tests of reading, while those who possess them in less degree make poor scores.

2. Intelligence probably is a factor in conditioning the quality of reading, but it is by no means the only factor. There seem to be specific habits that are quite as important. The above data bring out this point with decided emphasis.

3. It is reasonable to suppose that most children can acquire these habits if they are specifically taught and if the children are checked occasionally to insure their possession of the necessary habits. Many children do not hit the beginning of a line accurately because no one ever told them to do so, and they have had only very incidental practice in the skill. Under the circumstances it would seem well to stop laying the blame for lack of understanding upon poor intelligence, and attack the problem by making sure that the children have the habits and skills necessary for good reading. It is interesting to speculate as to how much of the failure to comprehend would be eliminated if effort were directed for a while toward removing mechanical handicaps from which even bright children seem to be suffering.

TABLE I. RESULTS OF THE READING HABITS MADE BY EACH MEMBER OF THE FIVE PAIRS

HABIT TESTED	MEMBER OF THE PAIR	PAIRS					AVERAGE
		First	Second	Third	Fourth	Fifth	
Number fixations per line	Good	13	27	28	40	25	26.6*
	Poor	26	46	55	44	93	52.8
Total number of regressions	Good	3	3	5	12	3	5.2
	Poor	9	25	19	20	26	19.8
Number lines accurately "hit" at beginning	Good	6	6	8	2	4	5.2
	Poor	8 (a)	3	4	0	0	3.0
Lip-movement and vocalization	Good	5	4	4	1	5	3.8
	Poor	5	2	3	1	1	2.4
Number words per section (silent)	Good	7.2	3.6	1.9	1.3	2.2	3.2
	Poor	3.1	1.0	2.2	2.0	.7	1.8
Number words per section (oral)	Good	3.3	1.8	1.7	1.0	1.2	1.8
	Poor	2.5	.8	1.6	1.1	.5	1.3
Difference between silent and oral	Good	3.9	1.8	.2	.3	1.0	10.4
	Poor	.6	.2	.6	.9	.2	.5
Number words correctly defined	Good	20	15	18	10	10	14.6
	Poor	10	12	10	10	10	10.4

*It will be observed that all these children have poorly developed reading habits when measured by adult standards. The fourth pair is particularly poor; both these children are average for the grade and very dull.

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ARTICULATION

Kindergarten, elementary school, junior and senior high school, college, and university, these are the strata into which American education is divided. The division, however, is mainly for purposes of administration. Those who have sought to read into it, a manifestation of the collective wisdom of the race or the mysterious working of biological differences have, we believe, strained at gnats even if they have swallowed camels. It has been the fashion in some quarters to regard the five-year-old as susceptible to a certain method of teaching whereas the six-year-old is properly handled by a distinctly different method. There has been a rather widespread belief that a physiological or psychological change in the child corresponds to the abrupt difference in training we give him when he enters the junior high school.

We believe that in its essential nature, education may more properly be regarded as a unitary process. We believe that its true course may more properly be characterized as continuous rather than disparate, uniform rather than saltatory.

It is readily admitted that for purposes of handling large groups of children and young people—for the purpose, in other words, of mass production in education—certain divisions of the school are desirable. But in order to minimize the faults and to diminish the losses which lurk in such a system, it is likewise desirable we should give heed to the articulation of the several parts of our educational machine.

We learn in educational psychology that individual differences are many and varied. The concept of age—mental, educational, achievement, physiological—brings with it a lively notion of the differences in rate of growth not only among different children but in the same child in respect to different characteristics. Accordingly, we are learning that no crude division of the period of childhood and youth on the basis of chronological age will suffice. We recognize, for example, that to withhold the teaching of reading from all children until they have passed their sixth birthday is stupid. On the other hand, we recognize that some children arrive late, that they are unable to negotiate the so-called "standard course of study" at the so-called "average age."

Now, just as differences in physical, mental, and emotional nature lead us to modify the character, amount, and onset of certain types of training, so a consideration of differences in the experience of children should lead us to make similar modifications. This means that we should take account not only of inborn traits but also of previous instruction.

We aren't doing it. The first-grade teacher assumes that there has been no instruction in the kindergarten. The seventh-grade teacher, being at the threshold of the junior high school, finds fault with the teacher of the elementary school. The same amiable custom is carried forward into the senior high school, the college, and the university. We lately heard a professor of history declare that he had repeatedly tested the students who came into his introductory classes in American history and that he had always found it impossible to pay any attention to the instruction that they were presumed to have received. "You can't count on it," he said. "There isn't

anything there. It is just as if they had never heard of American history."

Now, we who know something of the workings of the elementary and secondary schools realize that it would be impossible for pupils to study American history in the eighth grade and—as most of them do—again in the twelfth grade, without there being "something there." We admit the shortcomings of the history instruction in many of our schools, but it is simply inexcusable that, even with the very worst instruction, two years' study of American history should be neglected and misprized by a professor of history in a liberal-arts college. If he is unable to find even a trace of historical knowledge or judgment, it is certainly the fault of his method of appraisal—that, and his state of mind.

Koos has lately pointed out that courses which in the past were taught in colleges have more recently seeped down into the high school without having been withdrawn from the college. The result he says is that fine courses, judged by textbooks and laboratory manuals, are taught in the high schools without the colleges taking sufficient account of it. For example, students who desire to study chemistry in college are usually given the same introductory course whether they have pursued a course in chemistry in the high school or not. Even the college which offers two introductory courses in chemistry, one for those who have had chemistry in high school and one for those who have not, offers no permanent advantage to the student who had studied chemistry before entering college. After the first half-year, all students are advanced to the same second course and are regarded as indistinguishable. Perhaps they are indistinguishable; but if they are, it is the fault of the administration and teaching of the college department. As far as chemistry is concerned, the student who had studied it in high school should be permanently ahead of the students who began the subject after entering college. Here is a plain failure in the articulation of the high school and the college.

Again, there is in some quarters a similar waste of energy because of the unwillingness of senior high-school teachers to accredit work done in the junior high school. Undoubtedly there will be more of this as the junior high-school system grows and demands recognition for its work. Certain college entrance boards are already wrestling with the question of credit for work done in the junior high school.

It appears then that we need a saner view of the process of education, a realization of the fact that we have set up water-tight compartments in a situation where they do not belong. The passage from one type of school to another should be easy. It should not be based upon chronological age. It should be based upon the needs of the child, and these needs will largely be determined by the attainment he has reached. Let us take account of the instruction our children and students have received, and build upon it rather than do it over again. In short, let us articulate our work with the work of our predecessors. Let us not suppose that a few questions couched in our own most individual wording will determine for us the efficacy of previous teaching. Let us remember that all learning is not reproducible. Let us take a leaf from the book of the psychologists when they teach us that memory is measurable, not always by reproduction, but often by the effort required to re-learn. And finally let us give to the teacher whom the children had before they came to us the benefit of reasonable professional courtesy.

A new Bureau of Educational Research has been established by the Board of Education of Philadelphia. Philip A. Boyer, formerly principal of the Thomas Junior High School of that city has been made director.

FACTORS TO BE CONSIDERED

(*Continued from page 272*)

A first-year student might have considerable difficulty in taking French I when approximately half the class is made up of third- or fourth-year students, and on the other hand, the junior and senior students might carry the course with a small amount of application.

Repeated work.—In case a student fails in one subject, the question arises, should he carry this subject the next semester with his regular load, or carry one unit less? Obrien[1] reports that in the case of 8,696 pupils studied, 296 or 3.4 percent carried reduced schedules; 4,446 or 51.1 percent normal schedules; and 3,954 or 45.5 percent extra schedules. He also discovered that "Repeaters with extra schedules have 11.4 percent fewer failing grades than repeaters carrying only a normal or a reduced schedule." We do not know how much real truth there is in this statement since nothing is said concerning the intelligence of pupils. The question, however, of determining the pupil load should consider the advisability of taking four units in addition to the one which is being repeated.

Conclusions.—1. The factors which determine the pupil load are many, and should be set up in such a way that approximately objective decisions can be made on the part of the teacher or administrator.

2. We are making a mistake in definitely assigning four years for graduation from high school. The less we say about the 8–4 and 6–3–3 plans, the sooner we will get away from the tradition of forcing all children through the mill at the same rate.

3. There is practically no equality in the various "units" which are allowed for high-school graduation.

4. There is a definite need for carefully controlled experiments on the question of pupil load.

PERFORMANCE CHARTS THAT TELL THE TRUTH

JOSEPH A. BAER

Assistant Superintendent, Cuyahoga County Schools

Do your performance charts misrepresent the facts? Many of those which I have made in the past do. The common practice is to consider the grade a fixed quantity or line, throughout the year. This I did, in accord with the usual plan. This method of chart construction leads, however, to a number of inconsistencies which can be avoided by the scheme which I shall suggest. I have always tried to explain away the inconsistencies in the text, but the chart was there and seemed to give the lie to any explanations.

It is much easier to illustrate what I mean than to tell about it. Figure 1 will serve as an illustration. This chart shows the October norms in comprehension for the Monroe Standardized Silent Reading Tests, Form B, and the May performance medians for grades III to VIII in Cuyahoga County for the same test. These data with the scores for speed are given in Table I.

The chart is constructed in the usual way. The heavy vertical lines represent the grades, and both the October norm and May median are plotted on this line. Every grade seems to have a fair margin of safety above the norm. Right here is the rub. The norm is for October, and the performance is for May. The norm is for the beginning grade, and

(1) Obrien, F. P. *op. cit.* p. 61.

the performance is for the grade near the end of the year. The performance of each grade should be compared with that of the succeeding grade rather than with the norm of the previous October. When the tests are given again the next year the grades seem to have lost their ascendancy of the previous year, as shown on the chart, and are back near the norm for their grade.

The difficulty lies in the fact that the grade is not a fixed line or quantity but is constantly progressing, in a time sense, toward the right. The third grade becomes the fourth grade of the next year, in the main, and so on for each of the other grades. This is the crux of the whole matter.

Let us, then, change the horizontal scale so that the spaces between the heavy vertical lines represent the grades, and then go on a step further and divide this horizontal scale into ten parts for each grade. These ten parts represent the months of the school year. The horizontal scale is shown in Figure 2. The squared paper ruled in tenths of inches is the most convenient to use for this purpose. It is not necessary to show the months but it is done here simply to make the process clearer.

How would Figure 2 look if plotted after this scheme? Figure 3 answers this question, for it presents the data of Figure 1 so plotted. The norms are for October and are, therefore, plotted on the October vertical for each month and joined by the solid line. The performance scores for May are plotted on the May vertical, which is eight-tenths of the way to the next heavy vertical, and these points are joined by a broken line.

TABLE I. MONROE STANDARDIZED SILENT READING TEST CUYAHOGA COUNTY, 1924–25

	III	IV	V	VI	VII	VIII
COMPREHENSION						
October, 1924—Form 1	4.5	7.9	9.6	10.8	12.6	13.8
February, 1925—Form 2	6.1	8.5	10.0	11.9	12.8	14.3
May, 1925—Form 3	7.1	10.2	11.4	12.2	13.8	15.4
October Norm—Form 3	3.8	7.7	9.8	11.7	13.3	14.6
SPEED						
October, 1924—Form 1	86	120	134	151	168	167
February, 1925—Form 2	98	116	132	161	166	177
May, 1925—Form 3	111	142	152	165	177	186
October Norm—Form 3	81	121	141	179	192	208

We now find that the various grades are not "well above the norm," as Figure 1 seemed to indicate. Grades III and V are only slightly above where they should be in May. Grade IV is fairly high. Grades VI and VII are really below normal, while grade VIII has just reached the norm line. Figure 3 represents the facts much more nearly than Figure 1, and does not require the added caution of "October norms and May performance."

In addition to representing the facts more truthfully, this method has other advantages. The first of these is that the norms for any month in the year may be plotted, and the performance curve for any other month is directly comparable with it. It is merely a

graphic way of representing a changing norm, and by this method one could estimate the norms for any given month for each grade, assuming that progress during the year is uniform. This may be an assumption without foundation in fact, for there is some experimental evidence that seems to indicate varying

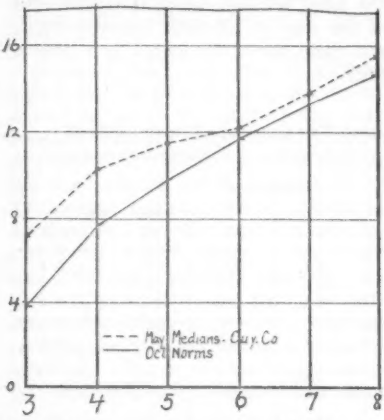

FIGURE 1. READING COMPREHENSION MEDIANS FOR GRADES III TO VIII, CUYAHOGA COUNTY, COMPARED WITH OCTOBER NORMS. MONROE'S STANDARDIZED SILENT READING TESTS, FORM 3. MAY, 1925

rates of progress during the school year and a falling off in the summer, particularly in the skills, such as the fundamentals of arithmetic.

Mental-age tables and B-scores have been built upon the assumption that progress is uniform throughout the year, and hence the same assumption is made in charting. When it is proved that progress is not uniform, all that will be necessary in the method of charting here presented will be to draw a standard-progress curve for each grade, and then compare the performance curve with it.

Another of the advantages of this scheme is that one is enabled to construct the progress curves for each grade. In the Cuyahoga County Schools three sets of standard tests are given to all of the pupils each year. If we try to show three curves besides the norm, the chart becomes too complicated to follow readily. There is sure to be more or less overlapping and crossing of lines.

By following the method suggested above it is possible to show the progress curve for each grade for the year as well as the general trend for all grades. Figures 4 and 5 are given as examples of this type of plotting. Figure 4 represents the grade performances in comprehension in reading with the Monroe Silent Reading Tests, Form 3, using the October norm.

Figure 4 is a modification of Figure 3. October, February, and May medians are plotted for each grade, and these points are joined to make the progress curve for each grade.

FIGURE 2. THE HORIZONTAL SCALE

Figure 5 represents the median performances on the three sets of tests in speed of reading. The number of words read per minute is used as the measure of speed.

It immediately becomes evident that the general trend in comprehension holds quite close to the norm. It also becomes evident that some grades have been uniformly good and some, rather poor. When the progress curve for a grade is nearly parallel to the norm, that grade has made normal progress. If the progress curve is steeper than the norm, the grade has made rapid progress, and if the grade curve is flatter than the norm, then the grade has made slow progress.

Grade III made about normal progress; grade IV made about normal progress the first half of the year, and rapid progress the last half. This chart also shows that grades VI and VII were consistently low throughout the year, whereas Figure 1

seemed to show both grades above the norm in their May tests.

Figure 5 shows an interesting condition with regard to speed in reading.

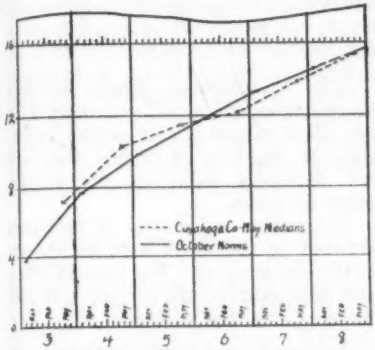

FIGURE 3. READING COMPREHENSION MEDIANS FOR GRADES III TO VIII, CUYAHOGA COUNTY, COMPARED WITH OCTOBER NORMS. MONROE'S STANDARDIZED SILENT READING TESTS, FORM 3, MAY, 1925

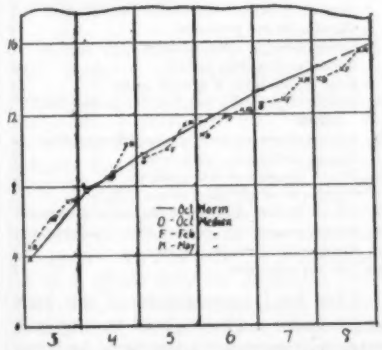

FIGURE 4. READING COMPREHENSION. MEDIANS FOR GRADES III TO VIII, CUYAHOGA COUNTY, FOR EACH OF THREE TESTS, COMPARED WITH THE OCTOBER NORM FOR FORM 3. MONROE'S STANDARDIZED SILENT READING TESTS. FORMS 1, 2, AND 3 WERE GIVEN IN OCTOBER, FEBRUARY, AND MAY RESPECTIVELY. SCHOOL YEAR 1924–25

Grades III and IV seem to have done fairly well in speed, but grades V, VI, VII, and VIII fall successively lower and lower as compared with the norm.

The general trend is upward, but the rate of progress is not as great as should be expected. The question is, "What is the cause of this slowing up as the children advance in the grades?" Several interesting speculations present themselves, but this is a discussion on charts and not on instructional difficulties and shortcomings.

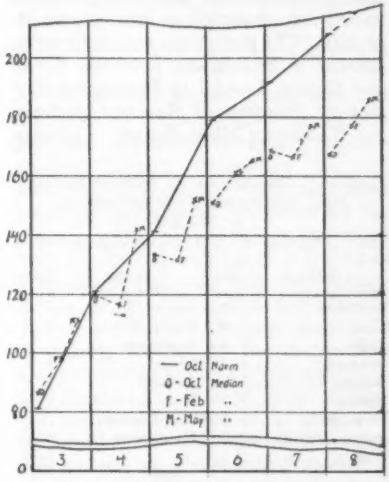

FIGURE 5. READING SPEED. MEDIANS FOR GRADES III TO VIII, CUYAHOGA COUNTY, FOR EACH OF THREE TESTS COMPARED WITH THE OCTOBER NORM FOR FORM 3. MONROE'S STANDARDIZED SILENT READING TESTS. FORMS 1, 2, AND 3 WERE GIVEN IN OCTOBER, FEBRUARY, AND MAY, RESPECTIVELY. SCHOOL YEAR 1924–25.

The methods of chart construction which I have outlined make it possible to do several things that are immensely worth while in charting. In the first place, charts constructed in accordance with this plan tell the truth and do not require textual warnings against misinterpretation. In the second place, performance curves so constructed are directly comparable with the norms, whether the norms are for October, January, or June. In the third place, and

(Continued on page 288)

THE USE OF STANDARD TESTS IN HIGH SCHOOLS

H. S. CHEN
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The issues of five current educational journals from June, 1922, to May, 1925, were examined in order to discover the uses of standardized tests in high schools which are presented in educational literature. The periodicals examined were: *Journal of Educational Research*, *School and Society*, *Journal of Educational Psychology*, *Educational Research Bulletin*, and *Teachers College Record*. Unfortunately, the 1924 volumes of the *Journal of Educational Psychology* and the *Teachers College Record* were not available. Altogether seventy-three articles were obtained that deal with the use of tests in high schools. The following is a list giving the names of the periodicals and the number of articles dealing with the use of tests in high schools, obtained from each:

Periodical	Number
Journal of Educational Research	31
School and Society	13
Journal of Educational Psychology	12
Educational Research Bulletin	12
Teachers College Record	5
Total	73

The tests cover a large number of school subjects as will be noted in Table I.

TABLE I. DISTRIBUTION OF ARTICLES DEALING WITH HIGH-SCHOOL TESTS DISTRIBUTED BY SUBJECT

Subject	No.	Subject	No.
Intelligence	15	History	2
Latin	9	Physics	2
English	6	Typewriting	2
Arithmetic	5	Sewing	2
Reading	4	Chemistry	1
Spelling	3	Music	1
Geography	3	Home Economics	1
Foreign Language	2	Miscellaneous	13
Algebra	2		
		Total	73

The *Miscellaneous* group includes those articles which deal with more than one school subject or with similar administrative problems of testing that are not classifiable under any one of the other categories.

The nature and variety of problems attacked by the use of tests are shown in the following list. The number after each item indicates the frequency of the occurrence of the problem:

1. Construction, evaluation, and validation of tests 14
2. Relation between intelligence and achievement, effort, elimination, failure, persistence of vocational plans, and occupation of parents 8
3. Effect of Latin upon the achievement of other school subjects 7
4. Diagnosis of special difficulties and errors 7
5. Prognosis of success in various school subjects 6
6. Classification and promotion 5
7. General survey of school condition 5
8. Evaluation of teaching methods 4
9. Relative achievement of different groups 4
10. Relative efficiency of consolidated and non-consolidated schools 3
11. Amount of correspondence between different abilities .. 2
12. Amount of retention of subject-matter 2
13. General discussion of testing program 2
14. Guidance in the selection of courses of study 1
15. Relation between class-size and efficiency of instruction 1
16. Relation between time spent in school and achievement 1
17. Measurement of teaching efficiency 1
18. Test and supervision 1

This brief examination of the literature in the field of school testing indicates that some work has been done in a large number of fields of endeavor, but when considered in terms of the total number of articles appearing in these journals it would seem that this phase of testing has not occupied an especially prominent place. A similar examination of the periodicals which are more strictly in the secondary field is needed in order to evaluate correctly the space given to this phase of educational work.

ON THE FIRING LINE

In a recent issue of the *Cincinnati School Index*, we are told that Cincinnati ranks eighteenth among the cities of the United States in the size of its salaries paid to elementary-school teachers and sixteenth in size of high-school teachers' salaries. Cleveland, it says, ranks second and sixth. Commenting upon this the *Cincinnati Post* says, "How a city ranks in pay for teachers is more important than how it ranks in population."

Transportation of Pupils in Cuyahoga County, Ohio, is the title of a mimeographed report which has recently been published by the County Board of Education. The facts of transportation for the twenty-three districts of this county for the past year are summarized in several tables. The cost of transportation in cents per pupil per day varies from 6.2 cents to 33.9 cents among these twenty-three districts.

In the mimeographed pamphlet entitled *Reports on Standardized Tests, Cuyahoga County Schools* (Bulletins 9 and 10) Superintendent Joseph A. Baer, assistant county superintendent of schools, has used a new and interesting form of chart. The records for the different grades of a school are plotted on this chart. The vertical lines represent the grades. In this way the performance of each grade may be compared with that of a succeeding grade, and the performance of the school, as a whole, at one date of testing may be compared with that at another date of testing. An article describing this method in detail will shortly appear in this *Bulletin*.

Normal curiosity is often responsible for research activities. Mr. J. B. Cameron, principal of the Maple School, Girard, Ohio, found the problem test in arithmetic in the article by Dr. R. L. Morton in an April number of the *Educational Research Bulletin*. On May 29, he gave this test to the pupils in his own school and during the summer furnished us with the following percents:

	Grade V	Grade VI	Grade VII	Grade VIII
Circleville	48.3	56.8	77.9	81.1
Maple School	46.7	61.2	73.7	82.1

The Annual Report of the Board of Education of Dayton, Ohio, for 1923-24 has just appeared, in which Superintendent Stetson summarizes the outstanding achievements of the past three years and gives seven objectives for the coming year. These seven objectives are: (1) the organization of a bureau of educational research; (2) the reorganization of the educational and administrative staffs; (3) the appointment of a visiting teacher to the Attendance Department to act as a social agent; (4) the organization of a teachers' college; (5) the establishment of a bureau of publications to take care of all annual reports and to edit *School Progress;* (6) some provision for the proper vocational and educational guidance for high-school pupils; and (7) the appointment of a department of music in each of the high schools.

These seven objectives were selected from the sixteen recommendations for the future improvement of the schools which Superintendent Stetson suggested.

During December, 1924, Principal J. B. Cameron of Maple School, Girard, used the first form of Pressey Diagnostic Tests in English Composition, Capitalization and Punctuation, in his eighth grade. The average score in punctuation was 11.5 and capitalization 19.0. The same test was repeated on the last day of April. The average in punctuation at the later date was 16.6 and in capital-

ization, 22.5. A gain of 46 percent in punctuation was shown by the scores of the second test, and a gain of 18 percent in capitalization.

Superintendent H. S. Carroll of West Liberty is planning to carry out a rather extensive testing program during the coming year. The subjects included will be reading, spelling, language, and arithmetic. A comparative study of certain diagnostic arithmetic tests will also be made.

Superintendent G. E. McCord of Springfield has been appointed superintendent of schools at Akron to take the place of Superintendent Reed who is going to a similar position in Bridgeport, Connecticut.

Superintendent Harrison Zellner of Oldsport has been appointed superintendent of schools at Castalia.

R. L. Van Scoyk, who during the past year has been principal of the high school at Leavittsburg, took a position at Newton Falls.

E. G. Mason, recently of Rittman, Ohio, accepted a position in Ashland College.

K. A. Vermillion, recently assistant county superintendent of Athens County, is the new superintendent of schools at Gallipolis.

The new school superintendent at Old Fort is John Lancaster. Last year Mr. Lancaster taught at Oak Harbor.

Principal Leman of the Gallipolis High School during 1924-25 has accepted a similar position for this year in Wakefield, Michigan.

The new high-school principal at Hudson, Michigan, is Mr. George H. Little who taught in Zanesville, Ohio, last year.

Mr. W. A. Driscoll, the "4740" superintendent at Bowersville for the past four years, has moved to Centerville to accept the position as principal of the Washington Township Centralized School.

EDUCATIONAL READINGS

KOOS, LEONARD V. *Overlapping in High School and College*, *JER*, 11:322-36, May, 1925.

Confining his discussion to chemistry and economics, the writer points out that the high-school and college courses are much alike. In view of the fact that students are often required to take both, the waste involved is evident. The writer suggests the public junior college as the remedy.

HULTEN, C. D. *The Personal Element in Teachers' Marks*, *JER*, 12:49-55, June, 1925.

In this investigation of the teachers' ability to mark papers, five paragraphs, taken from the Hudelson Scale, were scored in December and again in February by the same group of 28 teachers. The teachers were told that these compositions were written by eighth-grade pupils. They were really compositions which represent the test's standard for grades VI to X inclusive. The author concludes that the individual teachers were not consistent in giving high or low grades so that there was no corrective index available. He also believes that the teachers' marks were mere guesses; some were good, some poor, and some indifferent.

DAVIS, C. O. *Statistics of High Schools of the North Central States*, *S&S*, 22:118-20, July, 1925.

In this article the author gives a digest of the quinquennial study of 1,571 high schools accredited by the North Central Association. The data is very interesting and should be valuable information to the high-school teacher or principal. Among the important things which the author points out, we find the following:

NOTE.—The abbreviations used in this number are: *JER*, Journal of Educational Research; *JAP*, Journal of Applied Psychology; *JEP*, Journal of Educational Psychology; *S & S*, School and Society; *EAS*, Educational Administration and Supervision; and *SR*, School Review.

190 of these schools are organized as three-year senior high schools; boys make up 47.5 percent of the enrollment, girls 52.5 percent; an average of 19.5 teachers are employed in each school; 109,932 young people graduated from these schools in June, 1924; the girls who graduated outnumbered the boys in the ratio of 56.2 to 43.8, but with reference to the number who enter college, the ratio is in favor of the boys, being 42.4 to 34.5.

Other interesting facts with reference to the number and preparation of teachers, the teacher's load, and the kind and amount of work offered are also given.

HENMON, V. A. C. *Needed Research in the Field of Learning*, *JER*, 11:313-21, May, 1925.

The fundamental educational problems are "what to learn" and "how to learn." A plea is made for a revival of interest in experiments on learning.

POFFENBERGER, A. T. *School Achievement and Success in Life*, *JAP*, 9:22-28, March, 1925.

The author gives results which support the following conclusions:

1. The higher a man stands in college, the greater his chance of success, although so many other elements enter into the situation that this statement is true only in a general way.
2. Non-academic activities also predict success in after life.
3. A man in the lower part of his class has a greater chance than the man in the upper part to become a moral failure, as evidenced by dismissal of men of college rank from the army.
4. Athletic ability and class standing have little if any relationship, and the athlete has just as good a chance of being a success as any other man in his class.

MOSSMAN, LOIS COFFEY. *Changing Conceptions Relative to Lesson Planning*, *EAS*, 11:344-49, May, 1925.

This article calls our attention briefly to the possible need of revising some of our ideas concerning that bugbear of many teachers, the written lesson plan. This revision is to be made in the light of some of the outstanding theories which are modifying modern teaching practice, a number of which are listed. It is stated that modern educational theory "does not admit of following the practices relative to lesson planning that were considered good two decades ago." It requires rather "a more comprehensive sort of planning to keep in mind an ongoing process and be ready to meet new factors as they arise than it does a plan to present to the child a definite piece of subject-matter. Then follows a discussion of the need for written lesson plans, the form in which they should be written, their content, the extent to which they should be followed in the classroom, and their value to teachers and students. This article contains considerable food for serious thought.

TIDYMAN, W. F. *Adjusting Marking Systems to Differences in Groups*, *S&S*, 22:247-48, August, 1925.

Marking systems based on the normal distribution curve have done much to lessen the variation in marks given by different teachers. The problem of dealing with selected groups, either in the school as a whole or in a particular class, is still difficult. The author presents some illuminating material on the adjustment of marks to the variation which occurs in the ability of students in different college classes.

By making use of intelligence tests and giving each instructor the distribution of the individuals in a given class on the same basis as the marking system used in the college, it is possible for that instructor to know more accurately how this class compares with the entire student body. This information enables him to distribute his marks more intelligently. The scheme has not been carried far enough to predict improvement in the marking system, but the plan seems worth while and deserves serious consideration.

HULLFISH, H. GORDON. *The Need for Orientation in Education*, *EAS*, 11:217-27, April, 1925.

In this article Dr. Hullfish expresses his feeling that a definite need exists for orienting the practice of education until it is "based on one, *and only one*, fundamental doctrine." After placing wreaths in memoriam on the tombs of defunct "faculty psychology" and Herbartianism, he points to E. L. Thorndike as the master of educational psychologists, and to his doctrine of the "satisfier" and "annoyer" concepts as being fundamental in the psychology of learning and teaching. Several pages are devoted to showing, according to the author's point of view, that Thorndike's fundamental concepts may be interpreted in three different ways and therefore provides no escape from the "present muddle in theory and practice in education" by providing "one and only one fundamental doctrine" of procedure. The author concludes that Thorndike is not a reliable guide for educational practices because he would lead educators "to build upon incompatible psychological procedures—Herbartianism or behaviourism—which fail to make a place for intelligence in classroom practice." The author insists that there is an "urgent need for a clear-cut educational psychology," but offers no constructive suggestions.

RANKIN, P. T. *Effectiveness of Half-Day Sessions*, *JER*, 12:1-16, June, 1925.

In this investigation of the comparative effectiveness of half-day and full-day sessions, about four thousand children on half-day sessions were matched with an equal number on full-day

sessions who were like them in seven important factors: grade, age, sex, intelligence, home conditions, language ability, and percent of attendance. The comparative achievement of these pupils was determined by standardized-test scores in reading, spelling, and arithmetic; by the teachers' marks in these subjects and in oral English; and by the percent of failure. The conclusions are that the general effect of half-day sessions was unquestionably harmful. The achievement of pupils who attend such sessions was decidedly lower than that of pupils who have the advantage of full-day sessions. A rather curious effect was found in the relation to ability groups, for the superior and inferior pupils were injured more than the average pupils.

BUTLER, CHARLES H. *School Achievement and Attendance*, *SR*, 33:450–52, June, 1925.

A total of 1,913 monthly marks are included in this study, which, from objective measurement, represents a typical situation. The marking system in use in this particular school consists of five letters: E (excellent), S (superior), M (medium), I (inferior), and F (failure). From a period of four months, the following results were obtained: E's, 128 with an average of .398 absences per month; S's, 527—.459; M's, 911—.695; I's, 291—1.46; and F's, 56—2.911. Interpreted, the pupil making a mark of E was absent from class only once in two and one-half school months. How far irregularity of attendance is the cause of low marks is not known and cannot be determined from this study.

COURTIS, S. A. *The Validation of Statistical Procedure*, *JER*, 12:31–41. June, 1925.

This interesting article on the validation of statistical procedure is best summarized by quoting the author's final paragraph. "All research workers ought to stress the fact that definition of the problem, determination of homogeneity of data, determination of causal relationship, determination of the mode of contribution by each factor, and many similar matters which ought to influence our choice of statistical procedure, must be investigated experimentally before the selection of appropriate statistical methods can be made intelligently. Further, the essential elements of such validation must be reported as completely as the results of statistical analyses before credence can be justly expected for the conclusions reached."

TOOPS, HERBERT A. *A Printed Form for Computing a Standard Deviation on an Adding Machine*, *JER*, 12:56–58, June, 1925.

The author has here suggested a means of obtaining the standard deviation by eliminating the operation of calculating the extensions of the steps and their squares by the frequencies of the respective steps. A table which will assist in this process is also given.

IN PAPER COVERS

GRIMM, LESTER R., AND MOORE, ROBERT C. *Inequalities in Educational Opportunities in Illinois*. Springfield, Illinois, Department of Public Instruction, 1925. 50 pp. (Circular No. 192)

If "the foundation and safeguard of Democracy is equality of educational opportunity," then the condition revealed by this report should be considered gravely, for what is true of Illinois may very well be true of other states.

The counties of Illinois were ranged in the order of their ability to support schools and the richest and poorest quartiles were compared. They showed a marked difference in such conditions as expenditure per pupil, teachers' salaries, teacher training, and percent of high-school enrollment, all, of course, favoring the wealthy group. The suggested remedy is "a larger state distributive fund, apportioned according to needs," with "a larger unit, perhaps the county," instead of the district.

LINCOLN SCHOOL OF TEACHERS COLLEGE. *A Descriptive Booklet*. New York, Lincoln School of Teachers College, 1925. 117 pp.

FINLEY, CHARLES W. AND TIPPETT, JAMES S. *Field Work*. New York, Lincoln School of Teachers College, 1925. 123 pp.

LINCOLN SCHOOL OF TEACHERS COLLEGE. *Vacation Activities and the School*. New York, Lincoln School of Teachers College, 1925. 64 pp.

The first of these booklets presents an outline of the purposes of Lincoln School and the plans of procedure. The second of these pamphlets presents a record of some of the experiences and impressions gained through six years of field work in the elementary grades and in the junior and senior high schools. The third pamphlet describes certain pupil-activities which were carried on during the vacation period, in an attempt to link the work of the school and the vacation periods so that they will supplement and reinforce each other. The busy school man will find much in these pamphlets which will be suggestive to him.

WILEY, GEORGE M. *The Teaching Personnel in Village and Rural Schools 1923-24*. Albany, University of the State of New York, 1925. 24 pp.

Approximately one-quarter of the public-school teachers of the State of New York are employed by the rural and small village schools. The average rural-school teacher of New York is twenty-three years of age, has had four years of experience, and receives $24 a week, while the average village elementary teacher is twenty-seven years of age, has had seven years of experience and receives $29 a week. Although the educational situation regarding the training of teachers in this state is rather better than that for the country as a whole,

still the author suggests that definite progress toward the betterment of rural schools in the State of New York cannot be "adequately met until there is also thorough-going reorganization of the administrative and supervisory school unit."

Preferred List of Books for School Libraries in the State of Michigan. Lansing, Michigan, Department of Public Instruction, 1925. 130 pp.

This list of books for children from the first to the ninth grades covers a wide range, but keeps a consistent literary value. The actual arrangement is effectively worked out. The titles fall into groups, Mother Goose, Picture Books, Easy Reading, and go on to Folk Lore, Fairy Tales, Ballads, Romance, Nonsense, and then broaden and vary with adolescent interests into Out-Door, Occupation, Science, Indian, History, Travel, Adventure, Mystery, and other groups. The content of the book, in most cases, is briefly outlined. Reference books, bibliographies, and foundation books for a school library are included. The teacher should find this list a great help in suggesting reading to her classes.

EDUCATION COMMITTEE OF CHICAGO PRINCIPALS' CLUB. *Supervision.* Chicago, Illinois, D. S. Wentworth School Press, 1924. 30 pp. (The Chicago Principals' Club, Bulletin No. 2).

In the introduction to this pamphlet, Miss Gertrude Corrigan, chairman of the Subcommittee on Supervision, reaffirms the earlier report of this committee. "The most important part of the work of the principal is in the direction of improvement of classroom technique on the part of the teacher under his direction . . . ." "The most successful supervision is that which makes leaders of the teachers along lines of thought and experiment . . . ." "The best form for principal-leadership would seem to be the working out of policies through the initiative of teacher groups."

The report of the subcommittee on the organization and administration is contained in this pamphlet. The problem of organizing the administrative duties of the principal so as to provide adequate time for supervision is considered under several heads: the principal, the program, the placing of duties, office assistance, office equipment, and plans and devices that make for efficient administration. A number of blanks to be used in connection with the organization of the work are also suggested. The conclusion of the matter is, according to the committee: "A bit of head work; careful planning, preparedness, and system; a bit of faith in the ability of other people, plus adequate office equipment, the use of time-saving type-forms, and a good clerk will go far towards the solution of the problem involved in the organization of supervision." Several short reports by other committees are included. These are entitled: "Democratizing Supervision Through Teacher Cooperation;" "Unit Supervision Versus Subject Supervision;" and "Concrete Illustrations of Supervision."

GLENN, EARL R., FINLEY, CHARLES W., AND CALDWELL, OTIS W. *A Description of the Science Laboratories of the Lincoln School of Teachers College.* New York, The Lincoln School of Teachers College, 1925. 39 pp.

The rapid growth of high-school enrollment and the increased cost of building have pressed upon school administrators the necessity of studying economy in school architecture. An important item in this consideration is the cost and arrangement of the science laboratories. This short account of the science schedule of Lincoln School and the description of the laboratories provided with their equipment will prove most suggestive to the superintendent concerned with the problems of planning a new high school or stretching the present laboratory space to accommodate increased enrollment.

HENMON, V. A. C. *A French Word Book Based on a Count of Four Hundred Thousand Running Words.* Madison, Wisconsin, University of Wisconsin, 1924. 88 pp. (Bureau of Educational Research Bulletin, No. 3)

From a count of four hundred thousand French words representing a variety of material—college and school textbooks, philosophical prose, magazine and newspaper articles, modern essays and fiction, poetry, political and military articles, letters, and telegrams—9,187 different words were found. Of these the 3,905 words which occurred five times or oftener were selected to compose the list given in this pamphlet. These words are first arranged by the frequency of use and then alphabetically with the frequency repeated.

The different forms of the article, *le, la, l'*, were used 27,749 times, and there were 416 words which appeared five times. The author reports that the ten words, or their various forms, which occurred 5,000 times, or oftener, accounted for one-fourth of the running discourse. There were 655 words which occurred 50 times or oftener.

BOOKS TO READ

SPEER, ROBERT K. AND MCGAUGHY, J. RALPH. *Educational Crossword Puzzle Book.* Yonkers-on-the-Hudson, World Book Company, 1925. 53 pp.

These twenty-five crossword puzzles are based on the list of ten thousand commonest words, compiled by Professor Thorndike of Columbia. This is a novel puzzle book, for it is made from everyday words, and it uses whole sentences or phrases to suggest words required in the solutions. The method has the advantage of teaching a new word in its proper use.

RAWCLIFFE, F. W. *Practical Problem Projects.* Chicago, E. F. Compton and Company, 1924. 112 pp.

The purpose of this book is to present to teachers a number of projects which have actually been used in the schools at Cicero, Illinois, in the form presented in this book and with the use of the material and references listed. Projects for grades IV, V, VI, VII, VIII, and IX are included.

KLAPPER, PAUL. *Teaching English in Elementary and Junior High Schools.* New York, D. Appleton Company, 1925. 355 pp.

In the Preface the author says that this book is not a perfunctory revision of the older text, but is a carefully planned development undertaken to meet new educational needs and to include the approved practices of the last decade. The aim of the book is to present methods of teaching English which will train pupils in effective thinking and will stir them to the fullest self-expression. The general topics discussed are: informal and formal compositions in the first four years, composition in the grammar grades, the correction of written compositions, how to measure progress in composition. In the second part under the title, "The Former Aspect of Composition," the author discusses the teaching of spelling, the meaning and use of new words, teaching the formal aspect of composition, memory gems, and principles governing the teaching of grammar.

PERFORMANCE CHARTS THAT TELL THE TRUTH

(*Continued from page 281*)

finally, it is possible to construct grade-progress curves that show the performances of the grade for the year, and which also show the general trend for all the grades as against the curve of norms. All of these things are essential to a presentation of the facts as they are. Let us make our charts tell at least a modicum of truth.

NEW TESTS

The Compass Diagnostic Tests in Arithmetic are announced by Scott Foresman and Company to be generally available by October or November. The authors are Professors Ruch, Knight, and Greene of the State University of Iowa and Superintendent Studebaker of Des Moines, Iowa. There are twenty tests in the series. The reputation of the authors and their well-known interest in arithmetic will be a guarantee of the excellence of these tests.

STUDENTS RECEIVING THE DEGREE MASTER OF ARTS FROM THE DEPARTMENT OF SCHOOL ADMINISTRATION DURING THE SUMMER 1925

BERRY, GEORGE C. "Factors Determining Local School Boundaries in Franklin County, Ohio"

BLACK, ALBERT E. "The Organization and Administration of Extra-Curricular Activities in the City and Exempted Village High Schools of Ohio"

GARVER, V. A. "Unit Costs of Instruction in the High Schools of Six Ohio Counties"

GEIGER, H. H. "A Financial Survey of Galion, Ohio"

HEISE, BRYAN. "A Study of the Practice Effect of the Charters Diagnostic Language and Kirby Grammar Tests"

LEMAN, GRANT W. "Survey of a Six-Year High School"

LITTLE, GEORGE H. "Some Factors Which Should Effect the Reorganization of the Curriculum in the High School at Zanesville, Ohio"

MITCHELL, JOHN A. "An Analytical Study of Nine Land-Grant Schools for Negroes"

PAISLEY, E. A. "Trends of School Costs in Ohio"

PECK, RAYMOND R. "Case Studies of Individual Difficulties in Science Courses"

PYERS, DONALD A. "Proper Determination of the Boundaries of Certain Village and Rural-School Districts in Ohio"

RICE, CHARLES S. "An Analysis of Pupil Difficulties with Word Problems in Arithmetic"

SMITH, CHARLES S. "A School-Building Survey of Lorain, Ohio"

STONEBURNER, W. F. "The Relationship Existing between the Intelligence Quotient and Teachers' Marks When Checked by the Accomplishment Quotient and Case Studies"

TURNER, J. M. "A Survey of Business Management of Schools in Eight Ohio Counties"

THORNBURG, F. M. "A Study to Determine Whether the Correlations of Teachers' Marks with Intelligence-Test Scores Can Be Made the Basis for Rating Teachers"

VAN SCOYK, R. L. "A Study of the Standardized Tests in the Junior and Senior High Schools of Ohio"

WEAVER, A. G. "A Study of Some Methods of Measuring Teachers' Efficiency"